AMENDMENT TO THE CLAIMS

1-19 (cancelled)

20. (New) A head for a magnetic drive, comprising:

a substrate defining a generally planar air bearing surface and arranged with a face substantially in the plane of the air bearing surface and with a thermal expansion rate CTE1;

a transducer that has a bond to the substrate on a first side and having a transducer thermal expansion rate CTE2 that is greater than CTE1 such that the transducer expands relative to the substrate with increasing temperature in a first direction perpendicular to the plane of the substrate, the transducer having a face in the plane of the air bearing surface; and

a first restraint layer that has a bond to a second side of the transducer, opposite the first side, and that has a first restraint layer thermal expansion rate CTE3 that is less than CTE1,

the first restraint layer having a thickness of at least 2 μm and a thermal expansion rate CTE3 of about 1 x 10^{-6} /°C to 4.3 x 10^{-6} /°C, whereby the first restraint layer contracts relative to the substrate with increasing temperature in a second direction which is perpendicular to the plane of the substrate and opposite the first direction to reduce a distance of a thermal protrusion of the transducer beyond the plane of the substrate and maintain the arrangement of the face of the transducer substantially in the plane of the air bearing surface of the substrate.

21. (New) The head of Claim 20 wherein the transducer and the

first restraint layer are bonded together to have a combined expansion rate that is substantially matched with CTE1.

22. (New) The head of Claim 20, wherein the first restraint layer has dimensions and material properties that are selected to limit protrusion of the transducer beyond the substrate over an operating temperature range.

23. (New) The head of Claim 20, further comprising:

a second restraint layer positioned between the transducer and the substrate and that has a second restraint layer thermal expansion rate CTE4 that is less than CTE1.

24. (New) The head of Claim 23 wherein the transducer and the first and second restraint layers are bonded together to have a combined expansion rate that is substantially matched with CTE1.

25. (New) The head of Claim 24, further comprising a third layer that has a bond to the second restraint layer.

26. (New) The head of Claim 25, further comprising a bonding film between the second restraint layer and the third layer.

27. (New) The head of Claim 20 wherein the first restraint layer has a restraint layer width that is substantially the width of the transducer.

28. (New) The head of Claim 20 wherein the first restraint layer has a restraint layer width that is substantially the width of the substrate.

29. (New) The head of Claim 20 wherein the substrate comprises ceramic material with a thermal expansion rate in the range of

about 7 x 10^{-6} /°C. to 8.3 x 10^{-6} /°C.

30. (New) The head of Claim 29 wherein the transducer comprises metals with thermal expansion rates in the range of 12 x 10^{-6} /°C to 17 x 10^{-6} /°C.

31. (New) The head of Claim 30 wherein the first restraint layer comprises material selected from the group of materials consisting of: aluminum nitride, silicon nitride and silicon dioxide.

32. (New) A method of manufacturing a head for a magnetic drive, comprising:

A. providing a substrate defining a generally planar air bearing surface and arranged with a face substantially in the plane of the air bearing surface and with a thermal expansion rate CTE1;

B. bonding a transducer with a thermal expansion rate CTE2 greater than CTE1 to the substrate on the first side,such that the transducer expands relative to the substrate with increasing temperature in a first direction perpendicular to the plane of the substrate, the transducer having a face in the plane of the air bearing surface;

C. bonding a first restraint layer to a second side of the transducer, the first restraint layer having a thermal expansion rate CTE3 less than CTE1, the first restraint layer having a thickness of at least 2 μm and a thermal expansion rate CTE3 of about 1 x 10^{-6} /°C to 4.3 x 10^{-6} /°C, whereby the first restraint layer contracts relative to the substrate with increasing temperature in a second direction which is perpendicular to the plane of the substrate and opposite the first direction to reduce a distance of a thermal protrusion of the transducer beyond

the plane of the substrate and maintain the arrangement of the face of the transducer substantially in the plane of the air bearing surface of the substrate; and

D. reducing pole tip protrusion of the transducer by restraining thermal expansion of the transducer in response to increasing temperature by pulling back on the transducer in the second direction with the restraint layer due to CTE3 being less than CTE1 and the opposed directions of expansion.

33. (New) The method of Claim 32 further comprising:

D. bonding the transducer and the first restraint layer together to have a combined expansion rate that is substantially matched with CTE1.

34. (New) The method of Claim 32 further comprising:

D. selecting dimensions and material properties for the first restraint layer to limit protrusion of the transducer beyond the substrate over an operating temperature range.

35. (New) The method of Claim 32, further comprising:

D. bonding a second restraint layer to a second one of the sides of the transducer, the second restraint layer having a thermal expansion rate CTE4 that is less than CTE1.

36. (New) The method of Claim 32 further comprising:

D. including a material in the first restraint layer selected from the group: aluminum nitride, Si_3N_4 and SiO_2.

37. (New) The method of Claim 32, further comprising:

D. forming the first restraint layer by thin film deposition.

38. (New) A head for a magnetic drive, comprising:

a substrate defining a generally planar air bearing surface and arranged with a face substantially in the plane of the air bearing surface and with a thermal expansion rate CTE1;

a transducer with a thermal expansion rate CTE2 greater than CTE1 to the substrate on the first side, such that the transducer expands relative to the substrate with increasing temperature in a first direction perpendicular to the plane of the substrate, the transducer having a face in the plane of the air bearing surface;

a restraining means bonded to a second side of the transducer, the restraining means having a thermal expansion rate CTE3 less than CTE1, the first restraint layer having a thickness of at least 2 μm and a thermal expansion rate CTE3 of about 1 x 10^{-6} /°C to 4.3 x 10^{-6} /°C, whereby the first restraint layer contracts relative to the substrate with increasing temperature in a second direction which is perpendicular to the plane of the substrate and opposite the first direction for reducing a distance of a thermal protrusion of the transducer beyond the plane of the substrate and maintain the arrangement of the face of the transducer substantially in the plane of the air bearing surface of the substrate and for reducing pole tip protrusion of the transducer by restraining thermal expansion of the transducer in response to increasing temperature by pulling back on the transducer in the second direction with the restraint layer due to CTE3 being less than CTE1 and the opposed directions of expansion.